1. A CPP GMR sensor of the synthetic spin valve type comprising:

a substrate;

a GMR stack formed on said substrate, said stack having a first uniform lateral cross-section;

a patterned conducting non-magnetic spacer layer formed on said GMR sensor stack, said layer having a second lateral cross-section with a smaller cross-sectional area than said first lateral cross-section; and

a patterned capped ferromagnetic free layer formed with a third, uniform, lateral cross-section on said spacer layer, said third cross-section being smaller in area than said second cross-section and said capped ferromagnetic free layer comprising a ferromagnetic free layer on which is formed a conducting, non-magnetic capping layer.

2. The CPP GMR sensor of claim 1 wherein said GMR stack comprises:

a seed layer;

a pinning layer formed of an antiferromagnetic material formed on said seed layer;

a synthetic antiferromagnetic pinned layer formed on said pinning layer, said pinned layer further comprising:

a first ferromagnetic layer;

an antiferromagnetically coupling layer formed on said first ferromagnetic layer;

a second ferromagnetic layer formed on said coupling layer; and

wherein the magnetizations of said first and second ferromagnetic layers are antiparallel.

3. The CPP GMR stack of claim 2 wherein said first ferromagnetic layer is a layer of CoFe formed to a thickness between approximately 20 and 60 angstroms.

4. The CPP GMR stack of claim 2 wherein said second ferromagnetic layer is a layer of CoFe formed to a thickness between approximately 20 and 60 angstroms.

5. The CPP GMR stack of claim 2 wherein said coupling layer is a layer of Ru formed to a thickness between approximately 6 and 9 angstroms.

6. The CPP GMR sensor of claim 1 wherein the first uniform lateral cross-section of each layer is substantially square and has substantially the same lateral dimension which is approximately 0.3 microns or greater.

7. The CPP GMR sensor of claim 1 wherein said conducting, non-magnetic spacer layer is a layer of Cu formed to a thickness between approximately 20 and 100 angstroms.

8. The CPP GMR sensor of claim 7 wherein said second uniform lateral cross-section is substantially square and has a lateral dimension between approximately 0.2 and 0.4 microns.

9. The CPP GMR sensor of claim 8 wherein said conducting, non-magnetic spacer layer is centered on said GMR stack.

10. The CPP GMR sensor of claim 1 wherein said capped ferromagnetic free layer further comprises a ferromagnetic layer of CoFe, CoNiFe or CoFe/NiFe formed to a thickness between approximately 20 and 60 angstroms, on which is formed a capping layer of Cu, formed to a thickness between approximately 5 and 50 angstroms.

11. The CPP GMR sensor of claim 1 wherein said capped ferromagnetic layer is formed to a third, uniform lateral cross-section, which is a substantially square cross-section between approximately 0.03 and 0.1 angstroms in lateral dimension.

12. The CPP GMR sensor of claim 1 wherein said capped ferromagnetic layer is formed centered on said non-magnetic spacer layer.

13. A method of forming a CPP GMR sensor of the synthetic spin valve type comprising:

providing a substrate;

forming on said substrate a CPP GMR film stack, said film stack including a GMR stack portion, on which is formed a non-magnetic spacer layer, upon which is formed a capped free layer portion and said film stack having a common width W_1;

patterning said capped free layer portion and said non-magnetic spacer layer portion of said stack to a common width W_2 where W_2 is less than W_1 ; and then

patterning said capped free layer portion to a common width W_3, where W_3 is less than W_2.

14. The method of claim 13 wherein said GMR stack portion comprises:

a seed layer;

a pinning layer formed of an antiferromagnetic material formed on said seed layer;

a synthetic antiferromagnetic pinned layer formed on said pinning layer, said pinned layer further comprising:

a first ferromagnetic layer;

an antiferromagnetically coupling layer formed on said first ferromagnetic layer;

a second ferromagnetic layer formed on said coupling layer; and

wherein the magnetizations of said first and second ferromagnetic layers are antiparallel.

15. The method of claim 14 wherein said first ferromagnetic layer is a layer of CoFe formed to a thickness between approximately 20 and 60 angstroms.

16. The method claim 14 wherein said second ferromagnetic layer is a layer of CoFe formed to a thickness between approximately 20 and 60 angstroms.

17. The method claim 14 wherein said coupling layer is a layer of Ru formed to a thickness between approximately 6 and 9 angstroms.

18. The method of claim 13 wherein W_1 is approximately 0.3 microns or greater.

19. The method of claim 13 wherein said conducting, non-magnetic spacer layer is a layer of Cu formed to a thickness between approximately 20 and 100 angstroms.

20. The method of claim 13 wherein W_2 is between approximately 0.2 and 0.4 microns.

21. The method of claim 13 wherein said capped ferromagnetic free layer comprises a ferromagnetic layer of CoFe, CoNiFe or CoFe/NiFe formed to a thickness between approximately 20 and 60 angstroms, on which is formed a capping layer of Cu, formed to a thickness between approximately 5 and 50 angstroms.

22. The method of claim 13 wherein W_3 is between approximately 0.03 and 0.1 angstroms in lateral dimension.

23. The method of claim 13 wherein said first patterning is accomplished using a first bi-layer lift-off photolithographic mask of width W_2 formed on said capping layer and an ion-beam etch or a reactive ion etch and said etch removes all portions of the capping layer, the free layer and the non-magnetic spacer layer peripherally disposed to a region directly beneath said mask.

24. The method of claim 13 wherein said second patterning is accomplished using a second bi-layer lift-off photolithographic mask of width W_3 formed on said capping layer and an ion-beam etch or a reactive ion etch and said etch removes all portions of the capping layer and the free layer peripherally disposed to a region directly beneath said mask.

25. The method of claim 24 wherein said second bi-layer lift-off mask is centrally aligned and symmetrically disposed on said capping layer.